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09/994,190	11/26/2001	Hiroki Uemura	245402003400	8728

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MORRISON & FOERSTER LLP
755 PAGE MILL RD
PALO ALTO, CA 94304-1018

EXAMINER	
BATTAGLIA, MICHAEL V	

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2652	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/994,190	Applicant(s) UEMURA, HIROKI	
	Examiner Michael V Battaglia	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,13 and 14* is/are rejected.

7)☒ Claim(s) *10 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 10 is objected to because of the following informality. On line 1 of claim 10, the examiner suggests inserting -the- after "wherein". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5, 7, 9, 11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Opheij et al (hereafter Opheij) (US 5,579,298).

In regard to claim 1, Opheij discloses a semiconductor laser device, comprising: a semiconductor laser chip emitting a laser light (Fig. 5, element 7); a tracking beam generating diffraction grating for diffracting said laser light to generate a tracking beam (Fig. 5, element 30); a signal light diffraction grating for diffracting a signal light being said laser light reflected from an optical disc (Fig. 6D, element 12'); and a light receiving portion (Fig. 6D, element 10) having a pair of focus error detecting photodiodes (Fig. 6D, elements 23 and 24), extending as two strips with a parting portion (Fig. 6D, element 25) as a zonal gap interposed there between, for receiving a focus

error detecting beam among a plurality of beams diffracted by said signal light diffraction grating; said light receiving portion being arranged such that, as seen in two dimensions, a longitudinal direction of said light receiving portion is orthogonal to a direction of diffraction grooves of said signal light diffraction grating (Fig. 6D), and said pair of focus error detecting photodiodes being arranged such that a spot of said focus error detecting beam on said light receiving portion moves, due to a temperature change, in a range essentially limited within a region of said parting portion (Col. 8, lines 13-36).

In regard to claim 3, Opheij discloses that the pair of focus error detecting photodiodes has an outer shape in two dimensions of a parallelogram having a long side parallel to a longitudinal direction of said parting portion and a short side parallel to the direction of the diffraction grooves of said signal light diffraction grating (Fig. 6D, elements 23 and 24).

In regard to claim 5, Opheij discloses that said light receiving portion has another photodiode arranged such that, as seen in two dimensions, a longitudinal direction of said photodiode is orthogonal to the direction of the diffraction grooves of said signal light diffraction grating (Fig. 6D, element 35).

In regard to claim 7, Opheij discloses that the plurality of beams diffracted by said signal light diffraction grating includes a track signal detecting beam and said light receiving portion further includes a track signal detecting photodiode for receiving the track signal detecting beam, the track signal detecting photodiode having a longitudinal direction orthogonal to the direction of the diffraction grooves of said signal light diffraction grating as seen in two dimensions (Fig. 6D, elements 35 and 40).

In regard to claim 9, Opheij discloses that the plurality of beams diffracted by said signal light diffraction grating further includes a regenerative signal detecting beam (Fig. 6D, element S1)

and said light receiving portion further includes a regenerative signal detecting photodiode (Fig. 6D, element on which the beam spot S1 is shown) for receiving the regenerative signal detecting beam, the regenerative signal detecting photodiode being a parallelogram, as seen in two dimensions, having a long side sloped in a same direction as a long side of said pair of focus error detecting photodiodes and a short side in parallel with the direction of the diffraction grooves of said signal light diffraction grating (Fig. 6D).

In regard to claim 11, Opheij discloses that said pair of focus error detecting photodiodes and said regenerative signal detecting photodiode include respective regions in which respective spots of said focus error detecting beam and said regenerative signal detecting beam move in a working temperature range (Col. 8, lines 13-36).

In regard to claim 13, Opheij discloses an optical pickup apparatus for optically reading information written on an optical disc using the semiconductor laser device according to claim 1 (Figs. *5* and 6D).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art in view Ohnishi et al (hereafter Ohnishi) (US 6,125,087).

In regard to claim 1, Prior Art discloses a semiconductor laser device, comprising: a semiconductor laser chip emitting a laser light (Fig. 4A, element 122); a tracking beam generating diffraction grating for diffracting said laser light to generate a tracking beam (Fig. 4A, element 123); a signal light diffraction grating for diffracting a signal light being said laser light reflected from an optical disc (Fig. 4A, element 124); and a light receiving portion (Fig. 4A, element 121) having a pair of focus error detecting photodiodes, extending as two strips with a parting portion as a zonal gap interposed there between, for receiving a focus error detecting beam among a plurality of beams diffracted by said signal light diffraction grating (Fig. 4A, elements D2 and D3); said light receiving portion being arranged such that, as seen in two dimensions, a longitudinal direction of said light receiving portion is orthogonal to a direction of diffraction grooves of said signal light diffraction grating (Fig. 4A, element 121). Prior Art does not disclose that the said pair of focus error detecting photodiodes are arranged such that a spot of said focus error detecting beam on said light receiving portion moves, due to a temperature change, in a range essentially limited within a region of said parting portion.

Ohnishi discloses a pair of focus error detecting photodiodes (Figs. 3-4, elements 9a and 9b), extending as two strips with a parting portion (Fig. 4, element 220) as a zonal gap interposed there between, for receiving a focus error detecting beam (Col. 7, lines 41-44) among a plurality of beams diffracted by a signal light diffraction grating (Fig. 3, element 4). Ohnishi further teaches arranging the pair of focus error detecting photodiodes such that a spot of said focus error detecting beam on said light receiving portion moves, due to a temperature change, in a range essentially limited within a region of the parting portion to suppress an offset of the focus error signal (Col. 7, lines 41-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the pair of focus error detecting photodiodes of Prior Art such that a spot of said focus error detecting beam on said light receiving portion moves, due to a temperature change, in a range essentially limited within a region of said parting portion to suppress an offset of the focus error signal as suggested by Ohnishi, the motivation being to suppress an offset of the focus error signal.

In regard to claim 2, Prior Art discloses a semiconductor laser device, comprising: a semiconductor laser chip emitting a laser light (Fig. 4A, element 122); a tracking beam generating diffraction grating for diffracting said laser light to generate a tracking beam (Fig. 4A, element 123); a signal light diffraction grating (Fig. 4A, element 124) for diffracting a signal light being said laser light reflected from an optical disc, said signal light diffraction grating including a first diffraction grating (Fig. 4B, element 124b) having diffraction grooves of a pitch and a second diffraction grating (Fig. 4B, element 124a) having diffraction grooves of another pitch that is smaller than the pitch of the diffraction grooves of the first diffraction grating, the diffraction grooves of said first and second diffraction gratings extending in a common direction (Fig. 4B), and said first and second diffraction gratings being arranged adjacent to each other with a portion extending in a direction orthogonal to the common direction of the diffraction grooves interposed there between (Fig. 4B); and a light receiving portion (Fig. 4A, element 121) having a pair of focus error detecting photodiodes extending as two strips with a parting portion as a zonal gap interposed there between for receiving, among a plurality of beams diffracted by said signal light diffraction grating, a focus error detecting beam diffracted by said second diffraction grating (Fig. 4A, elements D2 and D3), said light receiving portion having a longitudinal direction arranged, as seen in two dimensions, orthogonal to the direction of the diffraction grooves of said signal light diffraction grating (Fig. 4A,

element 121). Prior Art further discloses that the spot (Fig. 6B, element 111c) of the focus of the focus error detecting beam in a direction, as seen in two dimensions, from the first diffraction grating side to the second diffraction grating side as a distance from said signal line diffraction grating increases. Prior Art does not disclose that said parting portion being sloped, as seen in two dimensions, from the first diffraction grating side to the second diffraction grating side as a distance from said signal line diffraction grating increases.

Ohnishi discloses a pair of focus error detecting photodiodes (Figs. 3-4, elements 9a and 9b), extending as two strips with a parting portion (Fig. 4, element 220) as a zonal gap interposed there between, for receiving a focus error detecting beam (Col. 7, lines 41-44) among a plurality of beams diffracted by a signal light diffraction grating (Fig. 3, element 4). Ohnishi further teaches arranging the pair of focus error detecting photodiodes such that the slope of the parting portion follows the movement a spot of said focus error detecting beam on said light receiving portion moves, due to a temperature change, along the parting portion to suppress an offset of the focus error signal (Col. 7, lines 41-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the pair of focus error detecting photodiodes of Prior Art such that the parting portion has a slope that matches the direction in which the spot of the focus of the focus error detecting beam moves, which is a direction, as seen in two dimensions, from the first diffraction grating side to the second diffraction grating side as a distance from said signal line diffraction grating increases, as taught by Ohnichi, the motivation being to suppress an offset of the focus error signal.

In regard to claims 3 and 4, Prior Art discloses that the pair of focus error detecting photodiodes has an outer shape in two dimensions of a parallelogram having a long side parallel to

a longitudinal direction of said parting portion and a short side parallel to the direction of the diffraction grooves of said signal light diffraction grating (Fig. 4A, elements D2 and D3).

In regard to claims 5 and 6, Prior Art discloses that said light receiving portion has another photodiode arranged such that, as seen in two dimensions, a longitudinal direction of said photodiode is orthogonal to the direction of the diffraction grooves of said signal light diffraction grating (Fig. 4A, element D4).

In regard to claims 7 and 8, Prior Art discloses that the plurality of beams diffracted by said signal light diffraction grating includes a track signal detecting beam and said light receiving portion further includes a track signal detecting photodiode for receiving the track signal detecting beam, the track signal detecting photodiode having a longitudinal direction orthogonal to the direction of the diffraction grooves of said signal light diffraction grating as seen in two dimensions (Fig. 4A, elements D1 and D5).

In regard to claims 13 and 14, Prior Art discloses an optical pickup apparatus for optically reading information written on an optical disc using the semiconductor laser device according to claims 1 and 2 (Fig. 4A).

Citation of Relevant Prior Art

5. Coops (US 4,835,378) discloses setting the angle of a separating strip to match displacement of a radiation spot due to temperature change (Figs. 5 and 6). Ophey (US 6,407,973) discloses a diffraction element grating with two gratings in same direction with different periods, a separating strip oriented to match spot shifts associated with wavelength variation, and a separating strip that extends at a small angle to the longitudinal direction of PD's (Col. 11). Maeda et al (US 5,956,302) (Fig. 5) and Miyake et al (US 5,202,869) disclose optical pickups with a laser,

tracking diffraction element, signal light diffraction element having two gratings in the same direction with different period, and light receiving portion with focus error detectors. Heemskerk (US 4,665,310) teaches that wavelength variation does not cause focus offset because displacement of radiation spot is along the boundary line between focus error photo detectors (Col. 4).

Allowable Subject Matter

6. Claims 10 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regard to claim 10, none of the references of record alone or in combination disclose or suggest a semiconductor laser device, comprising: a semiconductor laser chip emitting a laser light; a tracking beam generating diffraction grating for diffracting said laser light to generate a tracking beam; a signal light diffraction grating for diffracting a signal light being said laser light reflected from an optical disc, said signal light diffraction grating including a first diffraction grating having diffraction grooves of a pitch and a second diffraction grating having diffraction grooves of another pitch that is smaller than the pitch of the diffraction grooves of the first diffraction grating, the diffraction grooves of said first and second diffraction gratings extending in a common direction, and said first and second diffraction gratings being arranged adjacent to each other with a portion extending in a direction orthogonal to the common direction of the diffraction grooves interposed there between; and a light receiving portion having a pair of focus error detecting photodiodes extending as two strips with a parting portion as a zonal gap interposed there between for receiving, among a plurality of beams diffracted by said signal light diffraction grating, a focus error detecting beam diffracted by said second diffraction grating, said light receiving portion having a longitudinal

direction arranged, as seen in two dimensions, orthogonal to the direction of the diffraction grooves of said signal light diffraction grating, said parting portion being sloped, as seen in two dimensions, from the first diffraction grating side to the second diffraction grating side as a distance from said signal line diffraction grating increases; wherein the plurality of beams diffracted by said signal light diffraction grating includes a track signal detecting beam and said light receiving portion further includes a track signal detecting photodiode for receiving the track signal detecting beam, the track signal detecting photodiode having a longitudinal direction orthogonal to the direction of the diffraction grooves of said signal light diffraction grating as seen in two dimensions; and wherein the plurality of beams diffracted by said signal light diffraction grating further includes a regenerative signal detecting beam and said light receiving portion further includes a regenerative signal detecting photodiode for receiving the regenerative signal detecting beam, **the regenerative signal detecting photodiode being a parallelogram, as seen in two dimensions, having a long side sloped in a same direction as a long side of said pair of focus error detecting photodiodes and a short side in parallel with the direction of the diffraction grooves of said signal light diffraction grating.**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Battaglia

W. R. YOUNG
PRIMARY EXAMINER